

NOV 15 1989

ATLANTIC TESTING LABORATORIES, LIMITED

at

Box 29
Canton, N.Y. 13617
(315) 386-4578

Box 356
Cicero, N.Y. 13039
(315) 699-5281

November 10, 1989

Vermont Department of
Environmental Conservation
Petroleum Management Section
103 South Main Street, West Building
Waterbury, VT 05676

Tel. 802/244-8702
FAX 802/244-5141

Attn: Mr. Chuck Schwer

Re: Supplementary Subsurface Investigation
Boutin Beverage
Fairfax, Vermont
ATL Project No. VTCD1021-1-11-89

Gentlemen:

Pursuant to the request of the Vermont Department of Environmental Conservation, a supplementary subsurface investigation was conducted on October 25, 1989, at the referenced project site, in an attempt to better characterize the apparent oil spill problem.

The investigation consisted of two test pit excavations advanced with an hydraulic backhoe. The test pits ranged from 3 to 11 ft in depth. One test pit was advanced behind the bridge abutment wing wall adjacent to the Boutin residence to determine if the suspected abandoned storm drain under Rt. 104 is contributing to the problem as a conduit. The test pit exposed brown silty sand with some gravel and occasional cobble. The soils are probably a fill material used in backfilling the abutment. Groundwater was not encountered in the test pit and there were no apparent petroleum odors evident in the excavation of spoil material.

The second test pit was excavated directly under the outfall for the bridge storm drain, which drains runoff for a portion of the bridge deck. The test pit was excavated at this location to assist in the determination of the credibility of the information regarding the leaking fuel truck passing the site.

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The material noted in the excavation consisted of surficial rip-rap boulders and cobbles underlain by a fairly coarse greyish sand mix (depth or quantity of the sand was difficult to quantify due to the respective side slope location of the test pit). The test pit was terminated when larger boulders were encountered at approximately 3 ft in depth. No free water was present and there were no detectable odors in the soil indicating petroleum contamination. A soil sample was obtained from this pit for further laboratory analysis.

An oil interface tape was used to determine if measurable quantities of free product were present in the wells and to obtain groundwater measurements. The tape did not indicate the presence of any measurable free-product in any of the wells even though odors were present in MW-6. Consolidation of the groundwater measurements indicate groundwater elevations at respective well locations have not changed to any significant degree since the preparation of the flow map dated September 22, 1989. The flow direction based on these measurements is also consistent.

A previous site inspection noted a sheen present on water leaching from the embankment on the east side of Route 104 bridge abutment. A small hand excavated test pit was performed at this point to collect a leachate sample for laboratory analysis. Similarly, a water/oil sample was obtained from the west embankment (Boutin's).

A comparative study was performed on the recovered samples to determine if there is evidence of the presence of a petroleum product and if there is a similarity to the product leaching from the west embankment. The analyses performed on the recovered samples consisted of petroleum hydrocarbon scans (DOH Method 310.13).

The analytical results, which are included as a supplement to this text, indicate that the leaching product at the west embankment is a diesel fuel. The soil sample taken at the end of the culvert contained low concentrations of a petroleum product which could not be positively identified, but closely resembles characteristics of what could be a lubricating oil. The east embankment water sample exhibited similar qualities as was found in the culvert soil sample.

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A summary of significant facts involving this and the previous investigation are as follows:

1. The leaching product is identified as diesel fuel.
2. The Boutins dispense and store diesel fuel on their respective premises.
3. No other sources of diesel fuel were found in the area which could contribute as a potential source.
4. The diesel system on site did have an unquantified release in the form of a piping leak sometime in the spring or summer of 1989.
5. The disposition of the above repair is presently unknown. During the installation of MW-6, petroleum product odors were apparent in the recovered soil samples.
6. During the installation of MW-2, which is downgradient of MW-6 and the diesel storage and dispensing facility, no petroleum odors were present in the recovered soil samples.
7. There is no evidence of petroleum leaching from the embankment immediately downgradient of MW-2.
8. Soil Borings B-4 and B-4A, which were advanced approximately midway between MW-4 and MW-2, encountered refusal (possibly bedrock) at 9 ft below the surface which corresponds to approximately elevation 87.3. The refusal elevation, at this point, is higher than the local groundwater elevation.

Should the refusal of these shallow borings be indicative of bedrock and it extends (as a ridge) back toward the diesel fuel installation, the lack of product at MW-2 may be explainable, and in addition, complement the location of the leaching embankment (westerly limit corresponds to approximate location of B-4 and B-4A).

9. The analysis performed on the soil sample recovered under the outfall of the bridge storm drain indicates the presence of petroleum product hydrocarbons in very small concentrations which may be indicative of typical road grime residuals.

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10. The analysis performed on the water sample obtained from the east embankment indicates the presence of hydrocarbons in very small concentrations and could be attributed to asphalt decomposition (pieces of broken asphalt were noted in the local area) or, in part, be attributed to releases upstream from the dam refacing project which was said to have had oil sheen behind the cofferdam.

Based on an overview of the findings to date, the petroleum spill problem seems to be confined to the Boutin property.

Should the leaking pipe fitting have gone unnoticed for a period of a month or two at a drip rate of approximately one drip per half minute, a release volume over this time frame could range from 20 to 40 gallons.

Should the information regarding the product discharging from the fuel truck be factual, the impact of this spill as a primary contributor to the spill being studied is felt to be minimal. According to Mr. Boutin, the spill took place during a quantitative two inch rainfall. Route 104 north of the bridge abutment is curbed for the most part and appears to have an adequate storm runoff collection drain system which outfalls into the Lamoille River on the east side of the north abutment. Bridge runoff is positively drained and collected on either end of the bridge which both outfall into the river. A rainstorm of this magnitude will contribute to more runoff than infiltration. Should a surface spill have occurred on this particular day, one could undoubtedly expect it to have been drained to the river and washed downstream with almost no infiltration, being that this oil would be supported by the water.

The dam rehabilitation project may have contributed to some riverbank contamination to some extent if the situation of oil on the water behind the cofferdam is as Mr. Boutin claims it to have been. The apparent broad range of river stage fluctuation may have left residuals of petroleum product on the embankment should a release or a dewatering event have occurred. The river bends slightly to the south near the north abutment, which would make the north river bank the scour side of the river course.

The suspected abandoned storm drain north of the north abutment is felt to have a minimal contribution to the existing petroleum spill. Should it exist and it is potentially active, an upstream source for diesel fuel is required for it to contribute to the problem. To this date, there are no known potential sources of diesel within approximately two blocks

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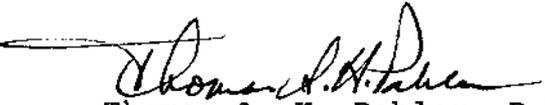
upgradient of the site. There are two suspected inactive underground tanks at the existing Post Office upgradient of the site. Probability suggests that should there be a problem with this particular installation, the local groundwater flow would be in the direction of Mill Brook just to the west of the structure, as do the storm drains appear to flow in the area.

The information compiled to date suggests the oil spill problem on the Boutin's premises is site specific. Evidence of diesel fuel leaching from the embankment and a potential source with a known and unquantified release complement the inference.

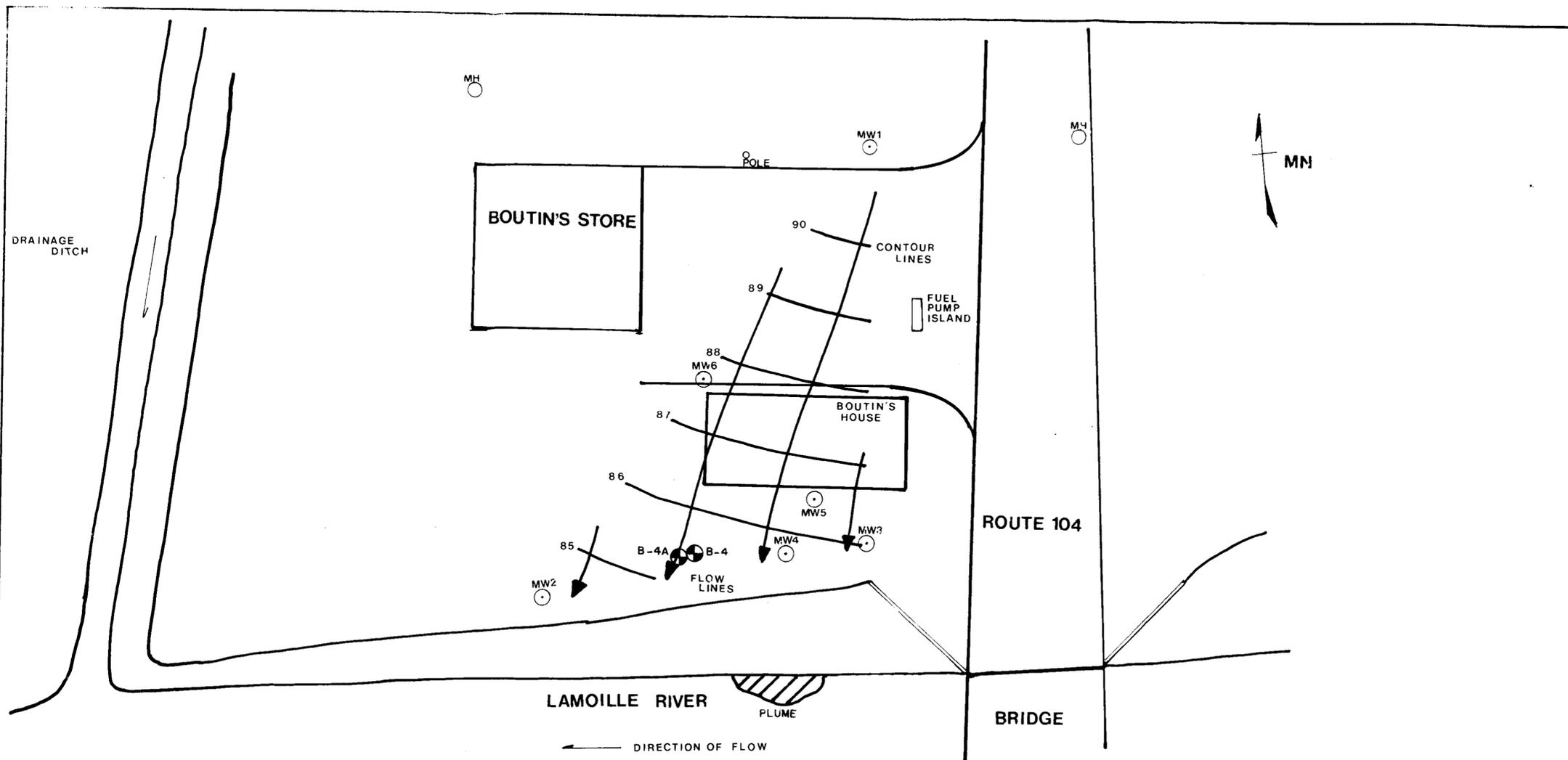
In order to conclude this investigation with respect to responsibility, consideration may be given to performing historical investigation of the area which could potentially impact the site, such as undocumented tank installations which could still be in place. Consideration may also be given to determine if the suspected subsurface rock ridge exists. During the field investigation, access to the area of B-4 and B-4A was denied by Mr. Boutin.

Recommendations, at this point, would be to thoroughly inspect the diesel fuel installation for tank and/or piping leaks. Additionally, consideration may be given to the installation of a product recovery system or performing an excavation between the diesel fuel system and the river to remove free product and associated contaminated soils to curtail the leaching product from the embankment. The excavation may be quite extensive, but may present itself as a one time remedial action with respect to river contamination.

Respectfully submitted,
ATLANTIC TESTING LABORATORIES, Limited


Thomas A. H. Pahler, P.E.
Senior Environmental Engineer

TAHP/SFT/dc



ASSUMPTIONS

- 1). Groundwater contours shown above are interpolations between groundwater elevation data obtained from the six (6) monitoring wells on September 7, 1989 at the direction of the State of Vermont Department of Environmental Conservation.

MW#	Top of Casing Elevation	Water Elevation
1	98.9	91.3
2	95.5	84.3
3	98.6	86.0
4	98.7	85.8
5	99.2	86.1
6	96.2	87.7

- 2). The full basement in the Boutin House is above the groundwater table and is expected to have a negligible effect on groundwater flow.
- 3). The underground storage tanks associated with the Fuel Pump Island shown above are outside the area encompassed by the 6 monitoring wells and is expected to have a negligible effect on groundwater flow.

REV.	DESCRIPTION	DATE	PROJECT NUMBER	DRF/TAC	GROUND WATER FLOW MAP BOUTIN'S - FAIRFAX, VERMONT PREPARED FOR VERMONT D.E.C.
				1"=20'	BY ATLANTIC TESTING LABORATORIES, LIMITED P.O. BOX 903 WILLISTON, VERMONT 05495 TEL. 802-860-1298
				9/22/89	
			VTCD1021-1-8-89		